

BARR ULTRAVIOLET (UV) OPTICAL FILTERS AND COATINGS



Overview:

Barr offers Ultraviolet (UV) optical filters and coatings used in a wide variety of existing and emerging UV-based applications. Whether the requirement is for small, prototype UV filter quantity, a “one-of-a-kind” coated optic, or for large-scale volume manufacturing associated with an OEM application, Barr is equipped to meet the need. With Barr’s approach to filter design and manufacture, our filter design engineers work closely with our customers’ optical system designers throughout the filter development process. The optical filters and coatings that result from this collaborative process often serve to optimize the performance characteristics of our customers’ instruments and applications. When it comes to filter design and manufacture in the UV spectral range, Barr has developed an extensive library of manufacturing plans for UV filters and coatings which can be deployed or tailored to produce optical filters, that best match customer requirements.

Representative Key Filter Types and Optical Coatings offered by Barr for UV-based applications:

- Metal-Dielectric Bandpass Filters, fully blocked from the UV to IR
- UVA, UVB Filters - fully blocked
- UV Filter Arrays, Discrete and Patterned
- UV Bandpass Filters with high transmission – made with Environmentally-Durable Oxide Films
- Mercury-line Isolation Filters such as i-line and g-line Filters
- AR-Coatings for UV Spectral Range
- UV Laser Bandpass Filters
- Solderable-metalized coatings
- Wide UV Passband Filters (such as filters in UVC) blocked for use with SiC or GaN Detectors
- Solar Blind UV Passband Filters
- Ultra-narrow UV Bandpass Filters
- UV Reflectors, UV Hot Mirrors, UV Cold Mirrors
- UV Beamsplitters
- UV Steep Edge Filters/UV laser Rejection Filters
- Longpass, Shortpass
- Neutral Density
- Band Rejection Filters

Representative Applications for Barr UV Filters and Coatings:

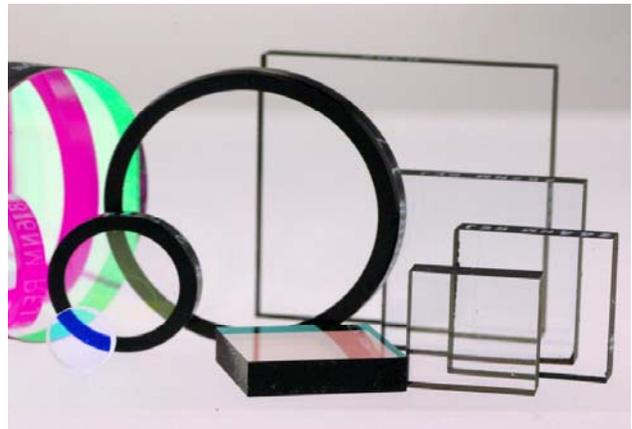
- Filter element inside UV Detector package
- Filter Array for use with UV Detector
- UV Optical Filter Coatings on Detector elements
- UV Light Source Filters in Lithographic-based systems
- UV Curing of Polymers
- UV Source/Lamp Monitoring
- Clinical and Analytical Instrumentation
- Laser Applications - Edge-type Rejection Filters, Bandpass, Dichroic Filters
- Defense & Security -Threat Warning
- UV Source Filter
- Fluorescence Spectroscopy
- Raman Spectroscopy
- UV Spectroscopy
- Applications which require R/T separation of UV radiation from Visible and IR
- Solar Measurements
- UV Imaging applications
- Metrology
- UV Radiometry
- Lidar
- Astronomy

ULTRAVIOLET SPECTRUM

Definition	UVC	UVB	UVA
CIE	100nm to 280nm	280nm to 315nm	315nm to 400nm
Traditional Versions	200nm to 290nm	290nm to 320nm	320nm to 400nm
	< 280nm	280nm to 320nm	320nm to 400nm

Other UV Filter/Coating Manufacturing Capabilities at Barr:

- UV Filters available in Different Shapes and Sizes
- In-house Environmental Durability Testing to MIL-STDs.
- UV Spectral Measurements (195nm to 400nm)
- Prototype and Large-Scale Manufacturing Volume



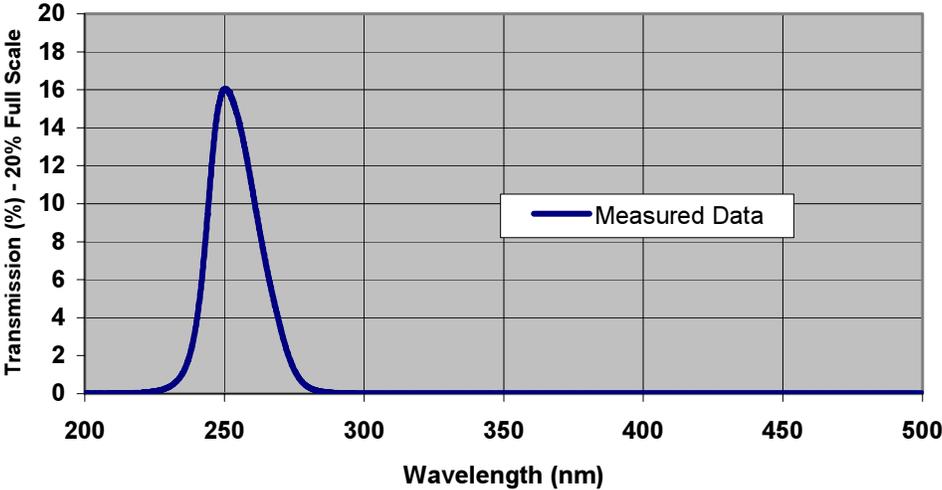
Representative Spectral Properties for some Barr UV Filters:

Metal-Dielectric UV Bandpass Filters

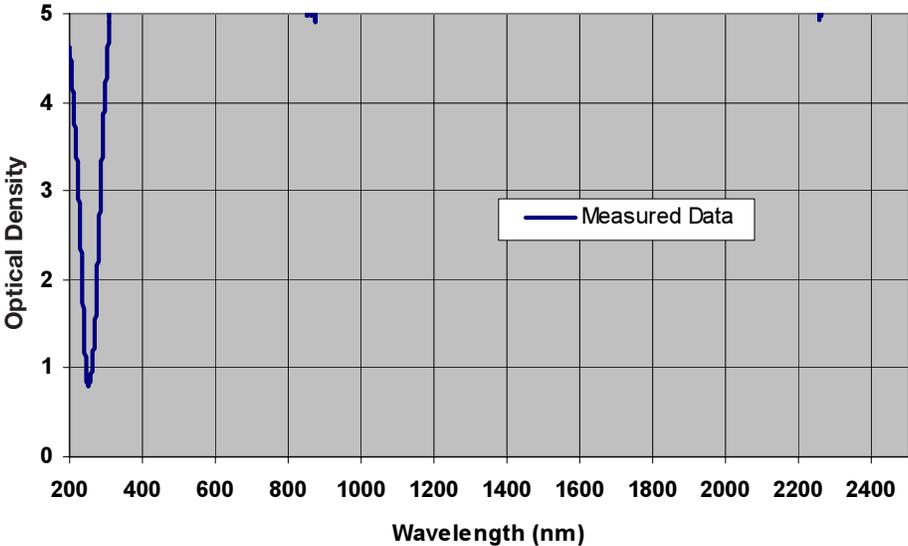
Typical Spectral Characteristics- Metal-dielectric UV Bandpass Filters

- Center Wavelength: Selectable between 200nm and 320nm
- FWHM bandwidth: 5% of CWL (nm)
- Peak Transmission: 15%
- Blocking: > OD 4 from UV through Far IR

254nm Metal-Dielectric Bandpass Filter



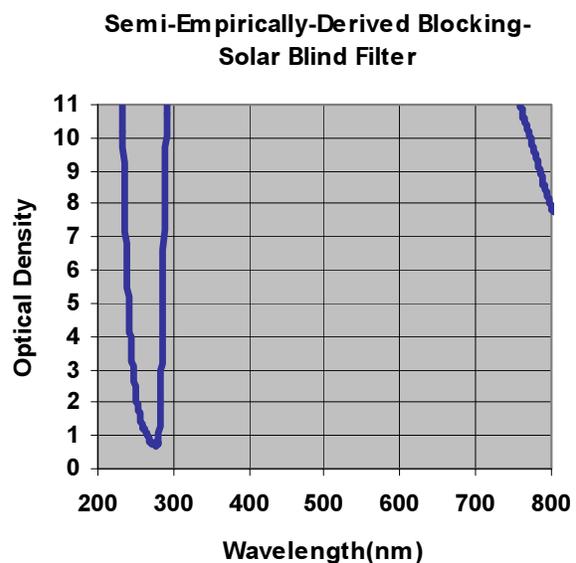
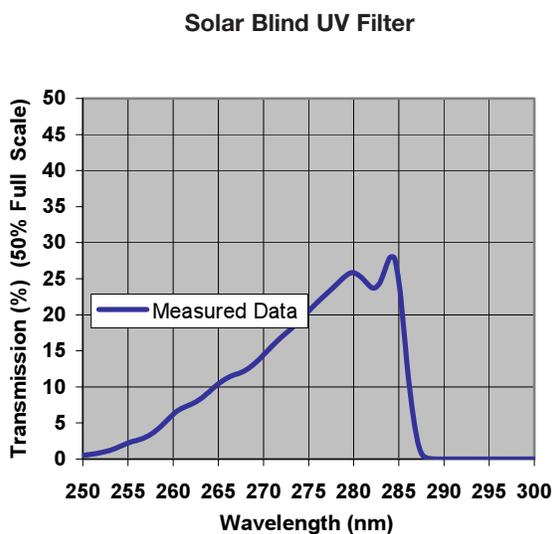
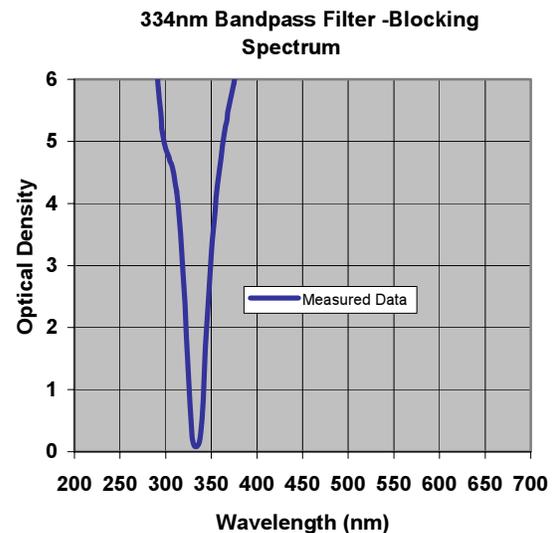
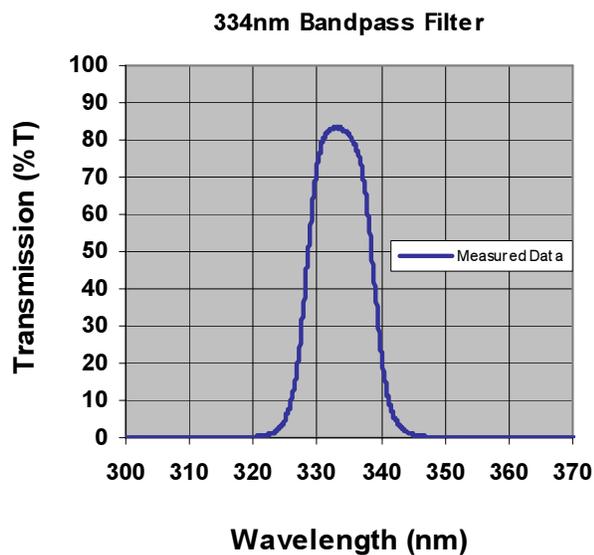
Extended Blocking Spectrum



Multi-Component UV Bandpass Filter with All-Oxide Coatings:

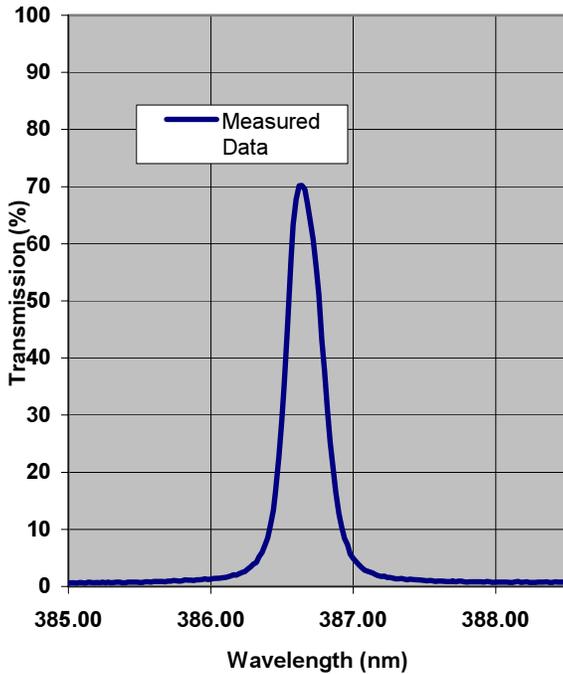
Typical Characteristics for Barr UV Bandpass Filters with Durable Oxide (Dielectric) Coatings

- Constructed with Single Substrate, Multiple Substrate, with or without selected Absorbing Glass, depending upon requirements
- Deep blocking ($> OD 6$) to 1200nm and to longer wavelength if required
- High Throughput
- Bandwidths from Wideband to Ultra-Narrowband (< 1 angstrom FWHM)

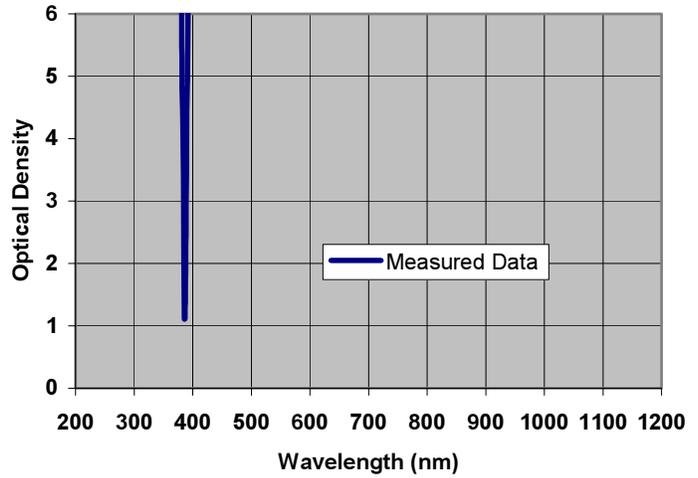


Ultra-Narrow UV Bandpass Filter, Deeply Blocked for Si Detector:

386.69nm Bandpass Filter, Bandwidth 3 angstroms (FWHM)

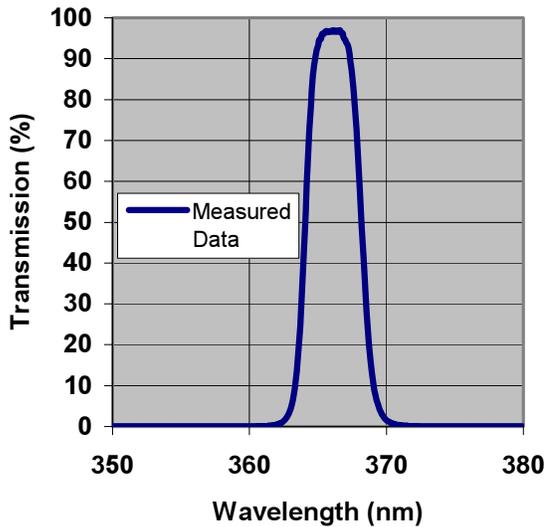


Blocking Spectrum

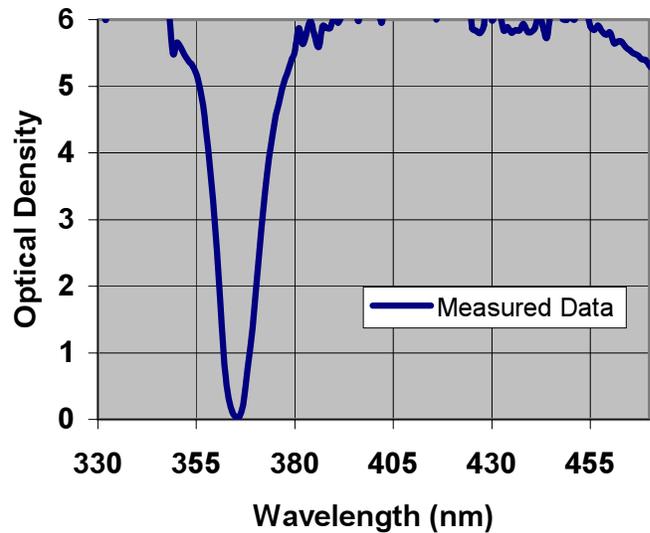


Mercury I-line filter made with Durable Oxide Coatings:

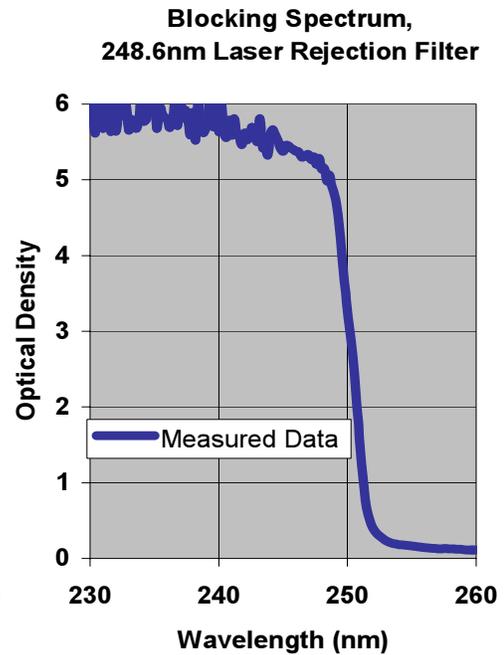
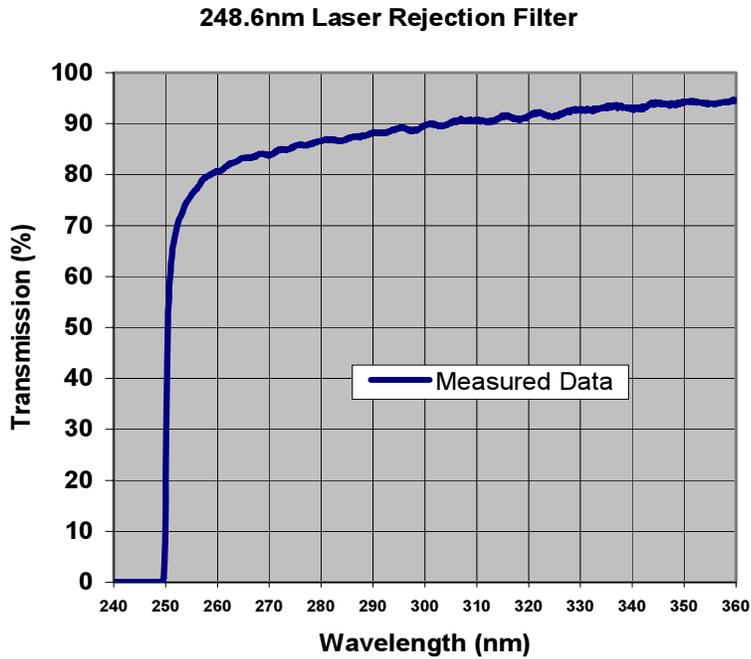
Mercury i-line Bandpass Filter



Mercury i-line Filter, Blocking



UV Step Edge Laser Rejection Filter:



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